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Geographical Dimensions of Russian Energy Developments

For decades, energy production and consumption have been of primary importance for the economy of Russia and the former Soviet Union. These newest energy plans support the country's economic connections with the West and global economy. Many factors in energy production and logistics (and politics) promote the integration of Russia with Europe, and almost only with Europe. This economic connection between Russia and the EU countries seems to be profitable for both sides, as their economies are mutually complementary. The formation of such mutual interests causes new security configurations in the foreign policies of these countries.

The former empire's parts bordering on Russia in the West, Belarus and first of all Ukraine, have become problematic due to transit payment conflicts. Consequently, the focus of logistic visions is geographically transferred to the north. Russian companies develop northern pipelines and ports as well as plan the construction of new oil and gas pipelines through Fennoscandia. On the other hand, these northern infrastructure plans are also a pure geographical coincidence, in the way that new oil and gas deposits lie in northern high-latitude zones. Logistic investments near the border regions of Finland are supported by the factor that the shortest way for gas (and partly oil) transportation to Central Europe is through the Baltic Sea area.

The new post-socialist reality differs very much from the past but still debated doctrine, which emphasised the role of superpower, non-Western Eurasian cultural identity and unique anti-capitalist institutions. For Russia, the new geopolitics means economic integration and networking with partners (companies, nations and economic areas) that are able co-operate successfully in the economic sector and to maintain unproblematic socio-cultural relations.

Energy and Russia's transition in the 1990s

Decline, recovery and geography

In the economy of Russia energy production is of primary importance for the economy and society. This is not unique when compared with other parts of the world, but Russia's low population density, long distances, energy exports, and challenging natural conditions add to the importance of the energy sector. The geographical vastness and the principles of economic development inherited from the post-revolution years caused energy production and its logistics to become large-scale projects already during the socialist era (Eronen 1999). Much of the energy is conveyed through North-West Russia via pipes and ports and much of it is consumed in the region's large industrial enterprises and in St Petersburg.

There are many definitions of North-West or North-western Russia (e.g. Blakkisrud & Hønnesland 2001, 9). In 2000, all Russian regions were grouped to form new macro-regions, Federal Okrugs. The North-West Federal Okrug consists of the Northern and North-Western Economic Regions (Andreev & Olsson 2003, 1, 5). The Northern Economic Region includes: the Republic of Karelia, Murmansk Oblast, Arkhangelsk Oblast (with the Nenets Autonomous Okrug), the Republic of Komi and Vologda Oblast. Five million reside in this Region, and the area of the territory is equal to the five Nordic countries and the Baltic States together. This region stretches as a 500-kilometre-wide belt from the borders of Finland to the Ural Mountains. The significant energy producers of the Northern Region are in Arkhangelsk Oblast bordering on the Barents and the Kara Seas, and in the Republic of Komi. The North-Western Economic Region includes St Petersburg, Leningrad Oblast, Pskov Oblast, Novgorod Oblast and the enclave of Kaliningrad Oblast. More than a half of the Region's residents, eight million people, live in St Petersburg.

This paper is focused on understanding of the state-of-art and future of the energy system (i.e. production, transport and administration) in this area as a part of Russia's energy apparatus. The paper examines Russian energy plans and trends up to 2020 and it assesses their implications to Russian energy integration with advanced

countries. There have been discussions of Russia's future geopolitical status: should the country be an Eurasian power with own mixed identity between the West and East or should it be an European nation amalgamated to European culture and traditions (Tsyganov 2003)? Both opinions get support in Russia. As it seems apparent, the new semi-capitalist order will prevail in Russia for a longer time. That clearly means a sort of new economism in Russia in that sense that economic interests steer the development of society. It is thus evident, that the energy business, as the most important source of foreign currency, will influence the contents of geopolitics. Geopolitical thinking and boundaries are socially constructed. Thus, if taking into account this fact and its implications, the Russian geopolitical orientation can be explained and anticipated as a function of the interests of energy companies and Russian energy apparatus. Nevertheless, the course of geopolitics is finally the results of political decisions. Tsyganov (2003, 103) says, "the post-Soviet geography [Russia's spatial thinking] is being reconstituted as a result of discursive strategies chosen by Russian intellectual and political elites, rather than of some fixed or 'natural' geopolitical interest". This paper does not go into the in-depth discussions of Russian geopolitical thinking but it attempts to analyse the geographical interests of the stakeholders of the energy (and export) sector and transmit this viewpoint into discussion.

Russian energy in transition

The stagnation of the Soviet Union's economy in the 1980s did not affect the energy sector greatly; energy production grew in the 1980s (Bater 1996, 224). After the late 1980s, Russia's importance as an energy consumer weakened (Table 1). The collapse of the Soviet economy deteriorated the entire energy system. Energy consumption fell at the same rate as the activities of the energy-utilising sectors slowed down.

Russia can be characterised as an economy dependent on natural gas. It has not always been thus: the Russian gas sector has been developed during the past few decades. The role of Gazprom in Russia's politics of the 1990s was significant. The network of the gas pipelines is of the same importance for Russia as the Autobahn motorways are for Germany. Natural gas is the main source of energy for the

country's industry and communities, and it became even more significant in the 1990s. The dissimilarity between Russia and China in respect to gas production is clear (Table 1).

Table 1. Russia's energy sector under the 1990s transition. Primary energy production in Russia, the USA, China and Finland; the countries' share in global primary energy production and consumption. Source: United Nations 1996; United Nations 2000; United Nations 2001.

Country - Year	Primary energy production, million oil tonnes (oil equivalents)	Country's share in global primary energy production, %	Proportion of natural gas production of primary energy production, %	Proportion of energy consumption of primary energy production, %
Russia				
1992	1 107	13.8	44.5	64.9
1993	1 036	12.9	46.7	67.3
1994	945	11.3	50.3	63.0
1995	999	11.6	54.3	64.6
1996	978	11.1	54.1	61.7
1997	956	10.7	53.1	60.9
1998	965	10.8	54.5	60.2
USA				
1992	1 604	19.9	28.9	119.6
1993	1 555	19.3	30.2	124.6
1994	1 708	20.5	29.1	121.7
1995	1 720	20.0	29.2	122.6
1996	1 753	19.8	29.2	123.8
1997	1 755	19.7	29.3	124.6
China				
1992	726	9.0	2.0	93.8
1993	749	9.3	2.1	94.5
1994	800	9.6	2.0	95.6
1995	866	10.1	1.9	94.6
1996	896	10.1	2.3	95.8
1997	890	10.0	2.6	95.1
Finland				
1992	7.6	0.09	0	303.9
1993	7.1	0.09	0	335.3
1994	8.2	0.10	0	318.9
1995	8.2	0.09	0	317.1
1996	8.3	0.09	0	333.4
1997	9.1	0.10	0	291.3

Russia's share in global primary energy production decreased from 14 to 11 percent (Table 1). Energy production bottomed out in 1997. In the subsequent years energy production grew slightly; in 1998 it was 0.7 percent higher than in 1997, and production in 1999 was 2.4 percent higher than the previous year (IEA 2002, 275). As seen in Table 1, Russia and China are very self-sufficient in energy whereas the

USA is a net importer of energy. Finland also is greatly dependent on imported energy.

In country comparison, the United States is the world's largest energy consumer. Still in 1990, the economic area of the present Russian Federation was the world's second-largest energy consumer (World Bank 2000, 292-293). The rapidly growing Asian economy has changed the global division of energy consumption in the late 1990s. China is the world's second-largest energy consumer. Russia's declined energy consumption has primarily been caused by the economic transition in the 1990s, when production fell to half of the level of production at the beginning of the decade. In the majority of countries, however, economic activities increased, thus also increasing energy demand. The comparison of energy consumption changes taking place in 1990-1997 illustrates the economic recession in Russia. In 1990, Russia's energy consumption was 906 million toe (tonnes of oil equivalent), while in 1997 it was only 592 Mtoe (World Bank 2000, 292-293.). Both statistics refer to the present area of the Russian Federation. The comparable data for the USA are 1926 and 2162, for China 867 and 1113, for Finland 29 and 33 million toe (World Bank 2000, 292-293.). Despite this, Russia is still a very large energy consumer. In 2000 energy consumption in Russia was 614 million toe having grown 3.7 percent from 1997. The respective figures for the USA was 2300 Mtoe (6.4 %), China 1142 Mtoe (2.6 %), Japan 525 Mtoe (1.9 %) and India 502 Mtoe (8.9 %) (IEA 2003, 50, 52, 54, 56).

Russia's production structure, regional energy demand and transportation needs determine the energy consumption. Measured by energy intensity (tonnes of oil equivalent per capita), energy consumption in Russia is not particularly high and has even decreased during the economic transition (World Bank 2000, 292-293). At the turn of the millennium Russia's energy consumption per capita matches Europe's average level, and is clearly lower than that in northern Europe but higher than that in southern Europe. The environmental pollution load was reduced due to the reduction in energy consumption in the 1990s.

Towards growth

Russia was ranked third in the world for energy production in 2000 (IEA 2003, 48-57). Russia's standing as a big energy producer rests on its abundant natural resources, e.g. gas, oil, coal, hydroelectric power, and uranium. In addition, there are great quantities of wood and peat in the coniferous forest zone in the north, though they are not utilised to any significant extent as sources of energy. The prices of biofuels have not been competitive under Russian conditions. Large-scale production and specialisation explain the technical and commercial properties of the energy system. Russia's energy consumption can be explained by the country's degree of industrialisation, specialisation in processing natural resources, and its northern and continental location.

Russia is a very large energy exporter. In the beginning of the millennium, it was the largest gas exporter, third largest crude oil exporter and sixth largest coal and electricity exporter in the world (IEA 2003, 13, 11, 15, 27). Whereas many other industrial countries are net importers of energy, Russia is a net exporter of energy. In this regard Russia is a developing country rather than an industrial one, because its own industrial production is only partly able to utilise the energy supply. Thus energy is being sold abroad. Russia produces especially natural gas for the European market. Around the turn of the millennium, the country produced 20 percent of the gas utilised in the European Union and 15 percent of the oil imported by the European Union (Liuhto 2002, 4). According to the import statistics of the European Union, Russia was the largest natural-gas supplier and the second-largest oil supplier (after Norway) to the EU countries. On the other hand, Russia's hard-currency income as well as citizens' welfare depend greatly on revenues coming from energy exports (Rautava 2002). There are hardly any other options for exports to Europe, because this dependence on European exports is concretised in the pipeline and power cable networks. The decades-old oil and gas pipelines transport energy westward to East Central Europe and further to the core of Europe. The production of oil and gas for export was significantly invested in already during the Soviet period.

Russia covers 13 per cent of the surface of all countries, being equal to the area of Canada and the USA together. The impacts of the growth and decline of the Russian energy sector are very geographical, and they are also very sporadic creating pockets of development or decline. The investment activity promotes regional and local development in a sporadic way. Population growth in the Khanty-Mansi Autonomous Okrug beyond the Ural Mountains in the 1990s (when other northern regions of Russia suffered population losses) is a good example of the effects of such investment activities (Heleniak 1999, 172). Energy companies operating in the export markets have been able to modernise their production and utilise foreign technology and capital as well as be competitive in world markets. This restructuring in production is not in any way unexceptional: companies have to adapt during the economic transition, and only the most competitive localities and regions grow and develop. The rouble devaluation in 1998 (and the high price of energy) brought economic growth and new wealth to Russian export companies and export-based localities and regions. This has materialised into investment in equipment, pipelines and transport facilities in the beginning of millennium.

Energy and changes in the economic structure

Energy projections and geography

Since the crisis of 1998, Russia's economy has been growing and developing. During the past few years, two projections of Russian energy supply and demand have been published. One of them is the International Energy Association's (IEA) World Energy Outlook, issued in 2000 (IEA 2002). After this, in November 2000, the Government of the Russian Federation approved the Russian Energy Strategy "The Main Provisions of the Russian Energy Strategy to 2020" (IEA 2002). Both predictions have given almost the same figures for primary energy production to 2020, but the projections are based on significantly differing views of economic growth and the energy sector's structural changes.

The Russian Energy Strategy expects the economy to grow (under favourable conditions) five percent annually. Such an economic growth rate would shrink the

differences in welfare between Western Europe and Russia in the long run. This scenario, however, conjectures that energy efficiency will improve substantially and would be resulting from growth in the service sector, which does not use much energy. Thus the scenario arrives at rather moderate energy growth figures. The energy consumption of Russia would grow to 884 million tonnes of oil equivalent (Mtoe; converted from coal equivalents (Mtce) used by Russians), and energy production would reach the pre-transition level, estimated to be 1066-1217 Mtoe in 2020 (IEA 2002, 53). Energy consumption would only grow by 36 percent when compared with the figures of 2000, when without growth in energy efficiency the energy consumption would have to almost triple (IEA 2002, 50-51.). In the late 1990s, the Russian economy was highly dependent on natural gas. According to the Energy Strategy, this situation is to be changed. The scenario assumes a shift away from natural gas to coal in electricity generation and an increase in the share of nuclear power. By 2020, the share of nuclear power in electricity generation is projected to increase to 21 percent while, in 2000, it accounted for 15 percent (IEA 2002, 56).

According to IEA's scenario, Russia's economy will grow considerably slower (2.9 percent annually), and the anticipated annual growth in energy production will be 1.5 percent. The energy efficiency of the economy will increase, but not so rapidly as it is proposed in the *Main Provisions*. As a result, energy consumption would reach 802 Mtoe. The total volume of energy exports was not estimated in this scenario. The outlook of IEA does not assume growth in the consumption of coal and nuclear energy. An increase in the share of coal is considered logistically difficult. Present gas and oil pipelines are also providing the domestic transportation infrastructure, the maintenance of which is paid for not only by domestic income but also export income. Thus, the argument for a large increase in coal consumption can be approached with scepticism.

Russia's strategy in regard to coal aims to increase its production in the Kuznetsk Basin, Kansk-Achinsk region as well as in the Russian Far East. Other production areas are only of local and regional importance. Coal is exported from the port of Ust-Luga lying west of St Petersburg, and the capacity of the port can be increased by eight million tonnes. Long rail transportation distances usually weaken the

competitiveness of coal exports. Coal exports to Japan have taken place from the Russian Far East, where coal production and its logistics have been competitive.

Russia aims to increase oil production at a moderate rate. Oil companies carry out test drilling and develop new oilfields to replace depleting ones. Oil production grows more dynamically according to IEA's prognoses than in the Russian programme. In the *Main Provisions*, the oil exports of 2020 will be on the same level as those of the late 1990s. If planned logistical development is realised and new oilfields get investments, the growth of oil exports will be possible, particularly if many oil companies compete in the oil sector. Besides logistical investments for the oil harbours of the Arctic Ocean and the Baltic Sea (such as Varandey and Primorsk), the reconstruction of the Druzhba pipeline and the bypass pipeline of eastern Ukraine as well as the expansion of the pipeline network to China or to the coast of the Pacific Ocean are being planned or are under construction. The usage of the Vysotsk and Murmansk ports would also aid oil transport. Some of the new transport capacity can replace the obsolete sections of the pipeline network.

The oil harbours of the Black Sea will be expanded, although Turkey does not want to increase oil transportation via the Bosporus. The port of Novorossiyskiy greatly needs to be expanded, because oil is shipped to this port also from Kazakhstan. The pipeline connecting Odessa to the Druzhba pipeline was ready in December 2001 and it is now possible to transport oil to Europe through it, first shipping it by tankers across the Black Sea. Besides Russia's oil, the oil of other CIS countries crosses the Black Sea. Oil transport from Azerbaijan will be developed by the construction of an oil pipeline via Georgia to Cheyhan, on the coast of Turkey. Consequently, there will be fewer oil deliveries from the southern Caucasian independent republics to the oil harbours of the Black Sea.

According to the forecasts, oil consumption in Russian domestic markets will grow owing to increasing car traffic and transport. Part of the oil consumption, such as in district heating, will be substituted increasingly by other types of energy sources. In North-West Russia wood and wood residue may be used for the generation of energy instead of oil, for instance in saw and pulp mills. As a result, the structural changes in production and refining as well as the increasing consumption of petroleum products

will bring about growth of 85 percent to the oil refining capacity by 2020 (IEA 2002, 54).

Russia is aiming to gradually reduce its dependence on the present gas fields of Western Siberia by developing new production both in Western Siberia and other areas. This aim is primarily influenced by the gradual decrease in the production volumes of the present fields which are already beyond the halfway mark of their lifetime. In Russia, there are many projects which aim to guarantee the future gas supply. These are of great importance also for the development of the northern areas of Russia. There are plans for new production near the Ob and the Taz, near the gas fields of Yamburg and Urengoy, and thus also close to the present production and transport infrastructure. These new fields are planned for development at a radius of 300 kilometres from Nadym.

A notable new site on the European side is the Shtokmanovskoye gas field in the Barents Sea. Gas production is planned to begin in a few years, which would mean construction of a pipeline south to the Kola Peninsula. The gas fields on the Yamal Peninsula are planned for production after 2015. These fields are located in Arctic conditions north of the present Western Siberian fields.

The expansion of gas production is planned for the gas fields in Siberia north of Irkutsk, where the Kovytkinskiy field and other fields along the Lena are located. Eastern Siberian fields will be developed in so far as consumers of natural gas are found in Asia. China and Japan are interested in purchasing Russian gas. Russia is building the Siniy Potok/Blue Stream gas pipeline across the Black Sea to Turkey. The gas of Western Siberia will run along this pipeline.

The Russian gas pipeline network is not in good condition. Seventy percent of the large-diameter trunk pipes were constructed before 1985, thus 19,000 kilometres (13 percent) of the pipelines have passed their estimated lifetime (IEA 2002, 118). Consequently, considerable investments have to be made in replacement and renovation of worn-out pipes. In addition, new fields require investments in trunk pipelines. The construction of the pipeline near the Barents Sea and the pipeline connecting the Yamal fields with Ukhta are the most challenging technically. Both of

these projects affect the neighbouring areas; pipes will go from the Shtokmanovskoye gas field via Karelia, and the pipeline to be built from the Yamal Peninsula will be connected with the Northern Lights pipeline which transports gas southwest to the European market. Russia plans to increase gas transportation to Europe by circumventing Ukraine. The pipeline via Belarus and Poland are to be developed before the gas of Yamal will be put into production. At the same time it would be possible to develop the connecting pipeline from Poland to Slovakia, i.e. to the Bratstvo/Brotherhood pipeline in the south.

Russia is developing plans concerning the expansion of pipelines through the Baltic Sea. This plan is partly an alternative to the Belarus-Poland pipeline project. The Baltic pipeline project aims at constructing a gas pipeline starting from the northernmost areas of St Petersburg and going to Greifswald (Germany). The pipeline will stretch across the bottom of the Baltic Sea and it would have a connecting pipe to Sweden. If this project is realised, Russian natural gas can be sold to the Swedish market as well. Sweden has had many reservations about Russia's plans for increasing the supply of natural gas; it is not considered as an environmentally-friendly alternative source of energy. Thus, the plan may be realised without a connection to Sweden.

The Nordic countries' gas market could be broadly set up along with the Russian gas pipeline construction. If Norwegian gas pipes were enlarged and connected to the trunk pipes coming from Russia, multiple-actor markets would emerge. Such a gas market structure is the target for the European Union. The EU is attempting to open the formerly monopolistic markets. According to the EU's directives, the owner of the gas pipeline and the distributor are to be judicially separate actors. This promotes competition. Consequently, gas markets could not be monopolised.

The modernisation of the nuclear energy sector should be rapidly realised in Russia. The old first-generation reactors are planned to be replaced and the second-generation reactors modernised so that their lifetime would reach 50 years. Replacement investments are targeted at the first-generation reactors (40 percent of all reactors) which were put into production in 1971-1979. These are still in operation and require renovation during the next years. As the lifetime of the first-generation reactors is 40

years (their original lifetime of 30 years has been prolonged to 40), the last of the 12 first-generation reactors should be replaced by 2020. At the same time the second-generation reactors should be modernised and new capacities created. The plans to expand nuclear energy rest mainly on carrying out projects not implemented since 1993. New nuclear power plants are planned for central and southern Russia, outside North-West Russia. Plans concerning the modernisation of the nuclear power plants close to the border areas of Finland are not far from realisation.

Various security aspects (e.g. military action in Chechnya) appear to promote the energy sector's growth in the north. Ukraine has increased the transit and transportation rates to such an extent that the northern routes are beginning to attract investments (Martelius 1999, 159). Belarus has paid its energy debts to Russia by transit settlements. Against this background, attempts to expand the system of transportation northward can be well understood. The shortest way to the centre of Europe from the Siberian gas and oilfields is through North-West Russia via the Baltic Sea Region, and from the Barents Sea via Fennoscandia (Sweden, Finland, Murmansk Oblast, the Republic of Karelia and Norway). Russia is striving to reduce dependence on the Baltic States. Latvia and Lithuania are important for oil transportation, but Russia has negatively viewed the development project of Ventspils oil harbour, referring to security risks (IEA 2002, 98). In truth, the ownership arrangements of the harbour are in contention. However, the strategic importance of the Baltic States can grow when these countries join the European Union in 2004.

Russia's energy policy in the Northern and North-Western Economic Regions

According to this strategy, the Northern Economic Region (as well as Eastern Siberia and the Far East) will become a gas net exporter (IEA 2002, 57). Oil and gas production will decrease in Western Siberia and increase in the European North. The Northern Region, in regard to oil, is already a net exporter, and there are plans to increase oil production in the area. Growth is anticipated in Asia as well. For this reason, it is planned to develop oil exports from Eastern Siberia and the Russian Far East to China and Japan. The Ural Region and the Volgo-Vyatskiy Economic Region,

the upper Volga area, will change from net exporters to net importers when the oil resources of the areas are depleted. The export volumes of coal production in Western Siberia, and particularly in Eastern Siberia, will grow.

The implementation of the Russian Federation's *Main Provisions* calls for considerable investments in the Northern Region. The aim of the strategy (IEA 2002, 58) is to increase both continental and offshore oil and gas production. This means increased production in the Timan-Pechora Basin and the start of the Barents Sea gas production. In the North, the aim is to develop electricity generation based on various energy resources and to improve the power grids, as well as to modernise the four nuclear reactors in Polyarnye Zori. The *Main Provisions* support the upkeep of coal and steam production as well as the respective transport network. This means support for Russia's preferred utilisation of coal. The *Main Provisions'* strategy focuses on the energy needs of industrial enterprises and the development of proper conditions for their operations in the future. Regional gas networks will be developed in the Republic of Karelia, in Arkhangelsk and Murmansk Oblasts as well as in the Republic of Komi; this refers to the Petrozavodsk-Murmansk gas pipe construction.

In the North-Western Economic Region, the *Main Provisions* promote the modernisation of electricity-generating plants, heat generation and logistical investments. In line with the *Main Provisions*, it is planned to develop electricity generation by renovating conventional thermal and nuclear power plants as well as constructing new units (IEA 2002, 58). The four reactors of Sosnovyy Bor are to be replaced with new reactors. Heat generation with gas will be particularly developed in St Petersburg. The energy dependence of Kaliningrad Oblast will be deceased by the versatile development of heat generation as well as the development of local energy production. The construction of a new oil harbour on the Baltic Sea is also mentioned in the *Main Provisions*, and was realised with the completion of the Primorsk facilities.

If all the *Main Provisions'* steps are realised in the Northern and North-Western Economic Regions, there will be a versatile energy system. With the development of the energy system, the forest and mining industries of the Northern Region, as well as the competitive advantages of the heavy industry of this area, will be improved, and a

more stable energy supply will be ensured. The efficiency of electricity and heat generation is of a great importance for St Petersburg. Logistic investments assist in getting export income, which will have considerable multiplier effects on the Russian economy. The renovation of nuclear power plants reduces risks connected with nuclear energy.

According to the *Main Provisions,* the share of the Northern and North-Western Economic Regions in the total energy production of the European part of Russia accounted for 18.7 percent in 2000 (IEA 2002, 57), and it is expected to increase to 19.7 percent by 2020. This will mostly happen because of the utilisation of new oil and gas fields. The regional demand also gives a boost to the growth of energy production: Russia's industry is built on the sizable utilisation of natural resources that will continue to require large energy inputs. Energy consumption can be controlled with the assistance of modern technologies, to which the *Main Provisions'* strategy strives. Modernisation requires investment activities in order to renovate energy production based on obsolete equipment. The development trends of Russian energy consumption are highly dependent on the energy efficiency, i.e. technical-economic solutions and working order, of the production plants and the consumer sector utilising the energy.

For Russia, Finland is the largest electricity purchaser. At the turn of the millennium, Russia's electricity company increased the capacity of the St Petersburg–Vyborg electrical trunk line (IEA 2002, 215). The electricity company has made contracts concerning electricity exports to Poland, Germany and Austria. In the Baltic area and in other parts of Europe, numerous projects in electric power grid construction are being planned and they will pave the way for Russia's electricity exports to the European market. The question, however, is whether Russians are able to modernise their old power plants and create new production capacities. The Northern and North-Western Regions' electricity generation is also needed to satisfy the local demand, because the regions' industry, infrastructure and households need electricity.

The aims of Russia's energy plans are to increase and ensure energy supply and the systems of transportation. The logistic importance of Fennoscandia is becoming more significant than it has been. The gas pipeline network construction opens new

potential and expands gas supply in the Baltic Sea Region. Various investments as well as R&D and technological improvements are necessary to realise the steps of the *Main Provisions*. New technology is needed for the increase of energy efficiency as well as for environmental safety. Russian energy measures rest on national interests. For example, in logistic arrangements, Russia is striving to keep all benefits and control over exports inside the country. Partly because of this, the *Main Provisions* support the increased activities in the Baltic Sea area.

Geopolitical restructuring and future visions

The Russian economy is integrating into the structures and institutions of advanced economies. Trade and business connections with remote districts inside the country are increasingly determined by market forces. The investments of the energy sector have strengthened this restructuring. Some structures have reversed; for example oil and gas pipelines, which ensured control over small COMECON countries, nowadays have become export channels to earn revenues from the market. Many companies, such as Lukoil, operate worldwide having their refineries and petrol stations in Europe and America. This is an epoch-making political interest compared to Soviet times.

Russia's energy strategy and companies' interests support the country's economic orientation to the advanced economies and the global economy. On the other hand, companies develop production and logistics for the needs of the domestic market. Due to the changing geopolitical conditions, the resourceful northern areas of Russia in both Asia and Europe are of great importance for the Russian Federation. They form part of energy system from the backwoods of Russia to global metropolises.

Russia has lost much of its political power and control in the south. Having achieved independence, the former Soviet republics created their own profiles both in the economy and foreign policy. For example, nowadays the USA and China are, more than earlier, visible in the oil and gas market of the southern independent republics (Martelius 1999, 157-163). The northern Caucasus is not a peaceful area, which creates difficulties for economic development and energy production.

The core of the Russian economy is formed around Moscow and St Petersburg as well as around rich oil and gas areas (Sutherland et al. 2000). The nucleus of growth of the Russian economy is in the industrial urban agglomerations, to which the population has been concentrated already since the beginning of the Soviet period. These industrial areas act under conditions of the domestic market or strive to enter the global market. The past-1998 recovery indicates that industrial investments, political steps and restructuring programmes support the existing main economic structures (i.e. production, communities and logistics).

Under the influence of enterprises, policy makers and inherited structures, Russia will continue to orient toward Europe. One of the latest signs of this Europe-oriented policy was the proposal of the European economic area Common European Economic Space, which would comprise both the EU and Russia. It was decided in the EU-Russia Summit in May 2001 and has been developed further in the Co-operation Council between the European Union and Russia.

Energy production and the development of the energy supply system promote the integration of Russia with Europe, and almost entirely with Europe. Economic development is binding Russia and Europe with economic geographical reasons: this economic connection between Russia and the advanced industrial countries is profitable for both sides because their production systems are complementary to each other. The viability of the Russian energy system brings benefits both to the EU and to Russia, and the stability of the Russian energy production benefits also the US economy. The formation of such mutual interests causes new security configuration in the foreign policies of these countries. This is seen, for example, from Russia-NATO relations and in Russia's attempts to abolish the visa requirements between Russia and the EU.

Instead of being trusted companions in business cooperation, the former empire's parts bordering on Russia in the west - Belarus and particularly Ukraine - have become problematic due to transit and transportation payment conflicts. Consequently, the focus of logistic visions has geographically moved farther north. Russian companies are developing the existing northern pipelines and ports as well as

planning the construction of new oil and gas pipelines through the northernmost parts of Europe.

Russia's continuing efforts to avoid the ports of other countries means that logistic decisions for energy production will not significantly change when the countries of East Central Europe become members of the EU in 2004. In regard to exports to Western Europe, however, changes may take place. As the new members will enter the EU, direct land access from Russia to the heart of Europe will become available through the Baltic States and Poland.

Industrial investments are required for the upgrading of the Russian energy system. Customers in the European Union are interested in the utilisation of Russian energy, and for this reason energy exports, and gas exports in particular, to Europe are anticipated to increase rapidly (IEA 2000, 146-148). Russia will be able to supply large volumes of gas if the planned investments are realised. Russian activities in the oil market create common European energy markets, thus decreasing energy dependence on Arab countries' oil. The EU countries also purchase Russian electricity, and for this reason electric power lines coming to the EU are being developed. Russia attempts to join the integrating European electricity market.

Conclusions

During the last years, the energy companies have played a central role in Russia's economy as a source of hard currency and in the political arena. These revenues could increasingly be spent for purchasing production technologies from the West. Thus, economic development in the country is highly dependent on the success of the energy system. The energy sector with its multiplier effects will continue to be an important part of the economy. The investment behaviour of the early 2000s indicates that the energy sector's revenues are invested in the maintenance and modernisation of the energy infrastructure. Thus, energy seems to become an integral part of the Russian growth engine.

Cooperation with European actors makes sense for Russia. Russian companies can export energy to where it is relatively easy to transport and demand will sustain it.

This direction is also positive from the political perspective, because through the energy purchases Russia can be seen as an important trade partner in Europe. This also increases the political importance of Russia in Europe.

In the regions of Eastern Siberia and the Russian Far East, the energy exports are developed toward the markets of China and Japan. This economic coupling in Asia is not likely to lead to the disintegration of the Federation or to other conflicts, but economic development of regions will be sporadic. Nevertheless, the projects to the Asian market are not alternatives (due to distances), and the revenues from these projects are marginal for a long time, compared with the co-operation with European and American partners.

It seems, that the new post-Socialist reality differs very much from the past but still debated doctrine, which emphasised the role of superpower, non-Western Eurasian cultural identity and unique anti-capitalist institutions. That time is over, for the time being. In a democratic and capitalist world, geopolitics is a constant competition between alternatives in searching for the best alternative. For Russia, it means integration with partners (companies, nations and economic areas) that are able co-operate successfully in the economic sector and to maintain unproblematic socio-cultural relations. Thus, current business interests are an explanatory factor of geopolitics in Russia.

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